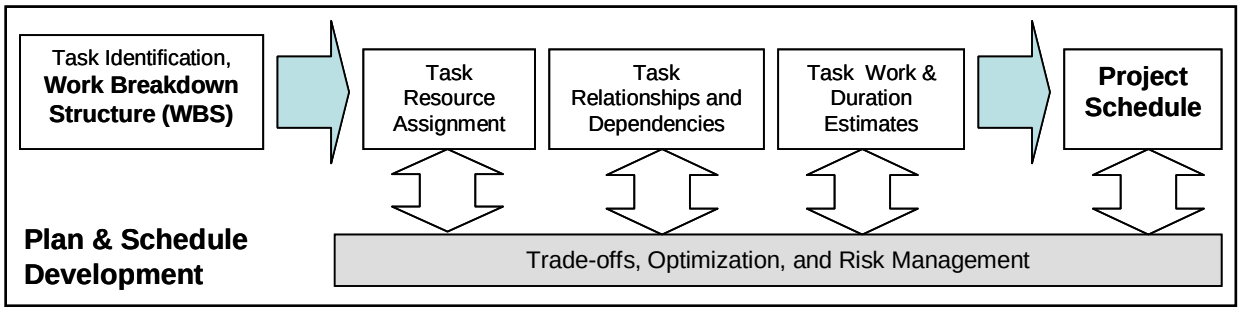
Project Plan Optimization Instructions

This template gives a list of activities that help optimize a Project Plan after the first pass Base Schedule has been developed. It can help resolve the conflicting objectives in Scope, Schedule and Resources that were initially established in defining the project objectives.



The first pass of scheduling a project rarely leads to an acceptable balance between the business and project objectives, the scope of work necessary to achieve those objectives, the time available, and the resources and budget available to the project. A series of tradeoffs must be made in one or more of these areas in order to align the plan with the project's objectives. Risks to making the project objectives must also be considered and related tasks incorporated into the schedule, if necessary.

Once a base schedule has been created, apply the optimization activities listed in this template to align the schedule and resource assignments with the overall project goals.

- Revisit the project's overall objectives.
- Revisit (or create) the Flexibility Matrix for this project.
- Apply as many of the optimization activities as necessary to align the schedule with objectives, taking into account the available resources and cost targets.
- If project objectives are changed, reaffirm the new objectives with all stakeholders.

Note that the optimization process is iterative with respect to other planning processes; it is likely to cause task definitions, ownership and dependencies to be redefined. However, be careful about redefining task durations in tasks that have not been otherwise changed. Don't change durations unilaterally in order to "fit" the schedule. Be sure that you reaffirm commitments by the task owners when any duration estimates are changed.

Optimizing Project Trade-offs

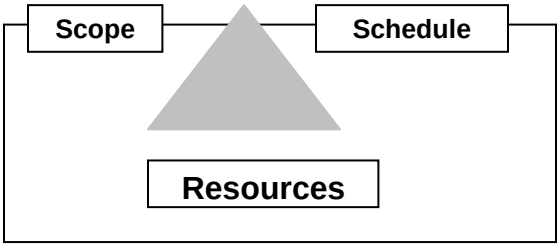
Foundation for Trade-offs: Project Objectives and the Flexibility Matrix

A project objectives document such as Project Objective Statement (or Project Vision) specifies:

What you are going to do (Scope)

By when (Schedule)

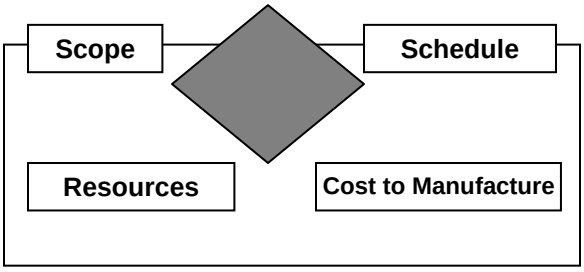
With how much (Resources, Cost)



Optionally, some projects include

Cost to Manufacture

where critical to the project objectives.



The baseline schedule just created as part of plan development must be reviewed for whether it meets all the high-level project objectives:

- Can we get the desired scope done, by the desired completion date, with the resources and related budget we've been allocated so far?

If not (which is usually the case after the first-pass schedule creation), then the schedule must be optimized using different techniques and tradeoffs among the project objectives may be required.

At this point, the team should consult the Project Flexibility Matrix to prepare for optimization. The matrix will help guide tradeoff decisions during the optimization process. Make any adjustments necessary if tradeoff factors have changed. If you did not create a Flexibility Matrix, refer to our template Project Flexibility Matrix (shown below) and create one now.

FLEXIBILITY MATRIX Tradeoff Factors	Inflexible – Most Critical	Adaptable – Negotiable	Accepting – Will Concede
Scope			
Resources			
Schedule			

The Flexibility Matrix is a tool for decision-making. It helps the team establish agreements on relative priorities among the major project objectives and guides trade-off discussions during schedule optimization.

Examples of Using Flexibility Information to Hone in on Possible Project Trade-offs

If Scope is more flexible, consider:

- Negotiating a shift in features to a later release.
- Negotiating the size of elements of the project, such as a reduced number of test sites, to require less resources and possibly less time.

Cautions:

- Analyze the business risk of scope-related issues.
- Be sure to reduce scope rather than quality!
- Get management and customer agreement to scope changes.

If Costs (resources) are more flexible, consider:

- Negotiating for additional resources to parallelize more work.
- Hiring outside resources to complete a part of the project.
- Buying components outside the company to hold the desired schedule and scope, even if it includes paying a premium.

Cautions:

- Avoid unrealistic expectations about what schedule time additional resources can truly save the project.
- Don’t underestimate the potential schedule, scope and quality risks of

managing outside resources to do part of the project.

If Schedule is more flexible, consider:

- Shifting the completion date to achieve the desired scope with the available resources and target project cost.

Cautions:

- Consider potential impacts on other projects that need the resources that are on this one- if the schedule is allowed to slip.
- Ensure stakeholders and influencers understand and agree with the new schedule target.
- A relaxed schedule is no reason to relax management – even a "reasonable" schedule can be missed.

Steps for Optimizing the Project Schedule

The overall process, using the flexibility matrix to guide trade-off decision-making:

1. Review the flexibility matrix together.
2. Get agreement that the flexibility matrix is still valid or adjust it with agreement of the team.
3. Identify issues in each area: schedule (time), scope and resources (costs).
4. Agree on which project parameters, if any, should be optimized to address those issues.
5. Use applicable techniques below to optimize the schedule.

Optimize Schedule Dates and Dependencies

Review the baseline schedule against any high level project goal dates from the project objectives. Does the baseline schedule, once all task information is integrated, still meet any desired interim and final milestone dates? Based on what the flexibility matrix says about the priority of schedule vs. the other parameters, use one or more of the following techniques to adjust the schedule to meet the desired dates:

- Re-evaluate logical dependencies and, as appropriate, change dependencies to shorten the schedule, alleviate resource issues, etc. For example, one way to shorten a task sequence is to change selected dependencies from finish-to-start to start-to-start with a lag where it's practical and not to overlap the work of those tasks.

- Re-evaluate task work estimates that ultimately drive task durations (but be careful here; don't change duration estimates just to fit a desired schedule). For example, consider whether use of more senior skilled people could reduce the effort required and shorten the duration.

- Reassign people from non-critical tasks to critical tasks to decrease the duration of the critical tasks.

- Re-negotiate deadline dates if schedule is more flexible.

- Change non-workdays to workdays to gain extra work time to meet the desired scheduled.

- Consider adding resources to give the project more capacity to get particular tasks done sooner.

- Examine the critical path in the schedule and look for further opportunities for shortening it.

Optimize Resource Utilization

Review the resource usage throughout the schedule. Based on what the flexibility matrix says about the priority of resources/costs compared to other parameters, use one or more of the following techniques to adjust resources.

- Check the schedule's resource demand with the project's resource availability – are there overloads on certain resources?

- Identify areas of opportunity – where certain resources are underutilized and thus can be deployed on other tasks.

- Temporarily postpone non-critical work to minimize or eliminate over-commitments during critical timeframes and provide a more even distribution of work for the team.

- Obtain other resources to relieve temporary peaks, such as people from other groups, temps, contractors.

- Decrease the work-rate per day of an overcommitted resource on particular task(s) to alleviate the overload – but note that this will increase task duration, so the impact on the schedule dates must be watched.

- Increase efficiency (and related hours to complete a task) by ensuring that team members are adequately trained.

- Improve productivity by maximizing the amount of time people work on continuous tasks.

- Re-define tasks, if necessary, to match resources and realign schedule to objectives.

- Re-assess dependencies and split tasks for better fit to resource availability and milestones.

- Try the scheduling tool's resource leveling feature for other ideas for leveling opportunities. Caution: Be careful when using automatic leveling features in a tool to optimize the schedule. Use the tool in a progression of small incremental steps and back-up often. You want to stay in control of the decision process during optimization.

Optimize Scope Definition

Based on schedule and resource constraints, reconcile your project scope with customer requirements:

- Negotiate a shift in features to a later release.

- Negotiate scope of roll-out, such as number of beta test sites.

- Analyze the business risk of scope-related issues.

- Analyze the process & try to reduce complexity.

- Make/Buy/Leverage components.

- In general, reduce scope rather than quality where appropriate, and be sure to get management and customer agreement.

Consider Risks and Incorporate Risk Management into the Plan

Be sure the schedule has adequate attention devoted to risk management. Use the project's risk analysis and risk management plan to include risk-related items in the schedule.

- Examples of Typical Risk Items

NOTE: these types of items should have been raised earlier in planning and work included in the WBS to account for them. But take this opportunity during optimization to really be sure the team has included all the necessary work and resource assignments.

- Long lead items: Decide earliest possible purchase dates.

- Staffing risks**:** Will we get the people we need at each part of the schedule? Could some people be pulled off unexpectedly? Do we need to allow buffer time just in case?

- Technical/Quality risks: Will it work? Do we need extra design or testing iterations built into the schedule?
- Customer satisfaction: Will customer be happy with what we create? What customer reviews, prototyping, testing should we include?
- Issues with outside partners/vendors: Will we get bumped in priority?
- Identify risks systematically:
- Check that team roster! Who might pose some kind of risk that could be dealt with by how we plan the project?
- Check your resource loading. Who is in danger of becoming overloaded? Who is likely to be pulled off to do side work? Would this risk make us adjust our resource assignments in anticipation?
- Approaches to handling risk in the schedule:
- Include extra time in the schedule overall.
- Include extra iterations on a deliverable in case it has to be re-done.
- Include extra review and test time, including early customer reviews.
- Invest in parallel approaches for creating a particular deliverable.
- Include items in contracts with vendors to emphasize critical areas.
- Prepare contingency plans for risky areas, know when to invoke.

Modifying the Project Objectives Statement (or Vision) after Plan Optimization

You must get approval by all affected project stakeholders for any changes to the Project Objectives Statement or Project Vision proposed during the optimization process. There should be continuous involvement of senior management during optimization.

If the optimized plan meets the Project Objectives:

- Document your decisions and get agreement.
- Ensure that all groups agree to changes.
- Include all changes in the project file.
- Distribute the new Project Objectives Statement or Project Vision to all parties.

If the optimized plan exceeds the Project Objectives:

- Prepare a fact-based presentation for management.
- Include cost/benefit and risk for each alternative.
- Include the recommendation of the team.
- Negotiate Scope, Schedule and Resources, and re-plan until the plan and project objectives are aligned.

Completion Criteria for the Optimization Process

The optimization process is completed when:

- The optimized project plan is agreed to by all stakeholders and team members (including management and the customer).
- The updated project objectives documentation (based on trade-offs made) has been distributed with all changes documented.

Administrative Information

Revision	Author	Date	Sections Affected	Change Summary
1.0		1/2/2009		

Current Version	1.0
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